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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,858	10/31/2003	Dong-Sil NMN Park	132855	2857
30952	7590	08/26/2004	EXAMINER	
HARTMAN AND HARTMAN, P.C. 552 EAST 700 NORTH VAIPARAISO, IN 46383			JOLLEY, KIRSTEN	
			ART UNIT	PAPER NUMBER
			1762	

DATE MAILED: 08/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/605,858

Applicant(s)

PARK ET AL.

Examiner

Kirsten C Jolley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-20 is/are allowed.
- 6) ☒ Claim(s) 1-7 and 9-12 is/are rejected.
- 7) ☒ Claim(s) 8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/5/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 7, 9-10, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Rafferty et al. (US 5,997,604).

Rafferty et al. discloses a method of applying two slurry/paste systems on top of each other -- slurry 12 comprising a binder and corrosion resistant metal particles, and metalide coating system 15 which comprises a paste binder in combination with powdered metal alloy, a halogen source as an activator which reacts with the metal of the metal alloy, and filler particles (col. 2-3). While Rafferty et al. teaches that metalide coating system 15 is preferably in the form of a tape, the tape can be replaced with a slurry by substituting most or all of the PTFE (used to form the tape) with the binder used in slurry 12 (col. 4, lines 12-14; and col. 2, lines 63-64). As to the binder used in slurry 12, Rafferty et al. teaches that the binder may be in the form of a paste, which necessarily comprises some solvent. Further the particles of the metalide system (activator particles, filler particles, and metal alloy particles) are necessarily dissolved in the solvent used to form the paste. It is noted that pastes have a formable, malleable consistency. Additionally, the process of Rafferty et al. heats the coated component to a temperature sufficient to vaporize and react the activator with the coating element of the donor

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material to form a reactive vapor of the coating element, the reactive vapor reacting at the surface of the component to form a diffusion coating containing the coating element (col. 4, lines 18-30).

As to claim 2, Rafferty et al. teaches that the paste coatings may dry before the heating step (col. 2, lines 66-67). Alternatively, it is noted that the solvent in the paste would necessarily dry to remove the solvent during the heating step.

As to claims 3-4, Rafferty et al. teaches that the donor material may comprise an aluminum alloy, and thus form an aluminide coating in col. 3, lines 28-37.

As to claim 5, Rafferty et al. teaches that the activator may be ammonium chloride or ammonium fluoride in col. 3, lines 49-51.

As to claim 7, Rafferty et al. teaches that the filler may be alumina in col.3, line 43.

As to claim 9, the turbine engine component of Rafferty et al. is a superalloy.

As to claim 10, Rafferty et al. is directed to small, localized repairs (col. 1, lines 16-17).

As to claim 12, Rafferty et al. teaches applying the slurries to a "relatively even coating" (col. 2, line 60). However, it is noted that there is necessarily a degree of non-uniformity because it is impossible to get a paste coating to be applied to a 100% perfectly uniform thickness.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rafferty et al.

As to claim 6, Rafferty et al. does not teach that the solvent used to form the paste is water. However, it is noted that some of the binders taught for forming a paste coating in col. 2, lines 20-31 are soluble in water. It is the Examiner's position that it would have been obvious for one having ordinary skill in the art to have used water as the solvent in the paste coatings of Rafferty et al. because water is the solvent that is least expensive and least harmful to the environment and because some of the binders of Rafferty et al. are soluble in water.

As to claim 11, Rafferty et al. does not specifically teach that its process is applied to a limited portion of a new-make component, however it would have been obvious to have used the invention of Rafferty et al. on new-make components as well as components for repair with the expectation of similar and successful results.

***Allowable Subject Matter***

5. Claim 8 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not teach or fairly suggest a diffusion coating method according to claim 1, whereby the malleable, formable adhesive

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mixture does not contain an extraneous binder and the donor material and the filler are cohered solely by the dissolved activator.

6. Claims 13-20 are allowed. The prior art does not teach or fairly suggest a process for forming a diffusion aluminide coating on a superalloy component of a gas turbine engine comprising the steps of: dissolving at least one ammonium halide activator in water to form an ammonium halide-containing solution; and mixing a powder mixture comprising a particulate donor material and particulate filler with the ammonium halide-containing solution to form an adhesive mixture having a formable, malleable consistency, whereby the donor material and the filler within the adhesive mixture are cohered *solely* by the at least one dissolved activator; in combination with the remaining steps claimed in independent claim 13.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kircher et al. (US 6,110,262) is cited for its teaching of applying a slurry coating to a gas turbine component comprising all of the claimed ingredients and further including a binder. Kircher et al. teaches that the slurry may have a viscosity of up to 4000 cP (col. 9, line 5), which is a thick, formable coating. (Honey has a viscosity of about 5000 cP.)

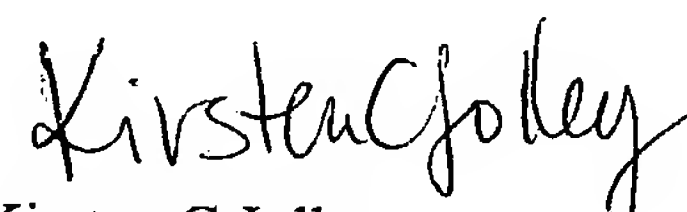
Kircher (US 6,730,179) and Rafferty et al. (US 5,334,417) are cited for their teachings of forming malleable, formable tapes for diffusion aluminide coating. However, the tapes lack solvent.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kirsten C Jolley whose telephone number is 571-272-1421. The examiner can normally be reached on Monday to Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P Beck can be reached on 571-272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Kirsten C Jolley  
Patent Examiner  
Art Unit 1762

kcj